

CLAIMS:

1. An apparatus for enabling functionality of a component, said apparatus comprising:

a random number generating module for generating a random number;

a hash function module in communication with said random number generating module;

a host in communication with said random number generating module;

at least one memory in communication with said host;

an encryption module in communication with said at least one memory;

and

a comparing device in communication with said encryption module and said hash function module,

wherein said comparing device compares a first bit string to a second bit string to generate a function enable output for the component.

2. An apparatus for enabling functionality of a component as recited in claim 1, wherein said hash function module further comprises a one-way hash function module configured to receive a pre-image input and output a hash value using a one-way hash function algorithm.

3. An apparatus for enabling functionality of a component as recited in claim 1, wherein said encryption module further comprises a public key encryption module, said public key encryption module being configured to receive a public key and a guess passcode from said at least one memory as inputs and generate a ciphertext bit string as an output.

4. An apparatus for enabling functionality of a component as recited in claim 1, wherein said at least one memory further comprises:

a guess register in communication with said host and said encryption module, said guess register being configured to receive a guess passcode from said host; and

a public key module in communication with said encryption module, said public key module being configured to store a public key therein.

5. An apparatus for enabling functionality of a component as recited in claim 1, wherein said random number generating module further comprises:

a linear feedback shift register in communication with said hash function module;

a NAND gate in communication with said linear feedback shift register; and

at least one inverter in communication with said linear feedback shift register and said NAND gate,

wherein said NAND gate is configured to receive an activation pulse and said linear feedback shift register is configured to output a random number.

6. An apparatus for enabling functionality of a component as recited in claim 1, wherein said apparatus further comprises a selecting device for selecting at least one of the function enable output and a bonding option output.

7. An apparatus for enabling functionality of a component as recited in claim 6, wherein said selecting device further comprises an OR gate having at

least one input for receiving the function enable output and the bonding option output.

8. An apparatus for enabling functionality of a component as recited in claim 7, said apparatus further comprising a bonding option circuit, said bonding option circuit comprising;

a pull up resistor in communication with said OR gate and a power supply; and

a switch in communication with a ground potential and said OR gate.

9. An apparatus for enabling functionality of a component as recited in claim 6, wherein said selecting device further comprises:

a multiplexer having at least one multiplexer input in communication with the comparing device and a multiplexer output;

a selection circuit in communication with the at least one multiplexer input;

a bonding option circuit in communication with the at least one multiplexer input,

wherein said multiplexer is configured to receive a selection input from the selection circuit that is used to determine whether to enable functionality of said component in accordance with the bonding option output or the function enable output.

10. An apparatus for enabling functionality of a component as recited in claim 9, wherein said selection circuit further comprises:

at least one first non-volatile memory location having at least one first selection bit stored therein;

at least one second non-volatile memory location having at least one second selection bit stored therein; and

an OR gate having a first input, a second inverted input, and a logic output, said first input being in communication with said at least one first non-volatile memory location and said second inverted input being in communication with said at least one second non-volatile memory location,

wherein said selection circuit is configured to generate a selection indicator on the logic output of the OR gate in accordance with the at least one first selection bit and said at least one second selection bit.

11. An apparatus for enabling functionality of a component as recited in claim 1, wherein said first bit string further comprises a ciphertext bit string generated by the encryption module.

12. An apparatus for enabling functionality of a component as recited in claim 1, wherein said second bit string further comprises a hash value generated by said hash function module.

13. An apparatus for enabling functionality of a component as recited in claim 1, wherein said comparing device further comprises a comparator.

14. An apparatus for enabling functionality of a component as recited in claim 1, wherein said component further comprises at least one of a network switch and a media access controller.

15. A component for selectively enabling functionality of an electronic device, said component comprising:

means for generating a random bit string;

a hash function module in communication with said means for generating; means for acquiring a guess passcode in communication with said means for generating;

an encryption module in communication with said means for acquiring; and

a comparing device in communication with said encryption module and said hash function module, said comparing device having an output for transmitting a functionality enable signal therefrom.

16. A component for selectively enabling functionality of an electronic device as recited in claim 15, wherein said means for generating further comprises a random number generating module, wherein said module is configured to receive an initiate signal and output a random number.

17. A component for selectively enabling functionality of an electronic device as recited in claim 15, wherein said means for generating further comprises:

a linear feedback shift register, said linear feedback shift register having an input and an output;

a NAND gate in communication with said linear feedback shift register, said NAND gate having at least one input and an output; and

a bank of inverters in a series configuration, an input to said bank of inverters being in communication with said output of said NAND gate and said input of said linear feedback shift register,

wherein said at least one input of said NAND gate receives an activation signal the initiates said linear feedback shift register to generate a random number on the output of said linear feedback shift register.

18. A component for selectively enabling functionality of an electronic device as recited in claim 15, wherein said hash function module further comprises a one-way hash function module configured to receive a pre-image input and output a hash value in accordance with a one-way hash function algorithm.

19. A component for selectively enabling functionality of an electronic device as recited in claim 15, wherein said means for acquiring a guess passcode further comprises:

- a host in communication with said means for generating; and
- a guess register in communication with said host,

wherein said host is configured to receive a guess passcode from a manufacturer corresponding to the random bit string.

20. A component for selectively enabling functionality of an electronic device as recited in claim 15, wherein said encryption module further comprises:

- a public key encryption module; and
- a public key module in communication with said public key encryption module,

wherein said public key encryption module is configured to receive a public key from said public key module and a guess passcode from said means for acquiring, and generate a ciphertext bit string therefrom.

21. A component for selectively enabling functionality of an electronic device as recited in claim 15, said component further comprising:

a bonding option circuit in communication with said comparing device; and

an OR gate in communication with said comparing device,

wherein said OR gate is configured to select the functionality enable signal from the comparator or an output from the bonding option circuit in order to generate a final enable output.

22. A component for selectively enabling functionality of an electronic device as recited in claim 21, wherein said bonding option circuit further comprises:

a pull-up resistor in communication with said OR gate and a power supply; and

a switch in communication with said OR gate and a ground potential.

23. A component for selectively enabling functionality of an electronic device as recited in claim 15, wherein said comparing device further comprises a comparator.

24. A component for selectively enabling functionality of an electronic device as recited in claim 15, wherein said electronic component further comprises at least one of a network switch and a media access controller.

25. A method for enabling functionality of an electronic component, said method comprising the steps of:

generating a random number;

calculating a first bit string from the random number;

determining a second bit string corresponding to the random number;
encrypting the second bit string with a public key to generate a third bit string;

comparing the third bit string to the first bit string to determine a match;
outputting a function enable signal in accordance with the comparison.

26. A method for enabling functionality of an electronic component as recited in claim 25, wherein said step of calculating a first bit string further comprises calculating a hash value of said random number.

27. A method for enabling functionality of an electronic component as recited in claim 25 wherein said determining step further comprises the steps of:

transmitting the random number to a manufacturer
calculating a guess passcode corresponding to the random number; and
receiving the guess passcode in a host.

28. A method for enabling functionality of an electronic component as recited in claims 25, wherein said encrypting step further comprises the steps of:

receiving a guess passcode from a host;
receiving a public key; and
encrypting the guess passcode and the public key to generate a ciphertext bit string.

29. A method for enabling functionality of an electronic component as recited in claim 25, wherein said comparing step further comprises the steps of:

receiving the third bit string at a first input of a comparator;
receiving the first bit string at a second input of the comparator;

determining if the first bit string matched the second bit string; and
outputting a match signal if a match is determined.

30. A method for enabling functionality of an electronic component as recited in claim 25, wherein said outputting step further comprises the step of determining a final output enable signal from a bonding option output signal and the function enable signal.

31. A method for enabling functionality of an electronic component as recited in claim 30, wherein said determining a final output step further comprises the steps of:

receiving the bonding option output signal at a first input of an OR gate;
receiving the function enable signal at a second input of the OR gate; and
outputting a final output enable signal from the OR gate in accordance with the first and second inputs.

32. A method for enabling functionality of an electronic component as recited in claim 27, wherein said transmitting step further comprises communicating with the manufacturer through at least one of an internet connection, a dial up connection, and a voice connection to obtain the guess passcode.

33. A method for enabling functionality of an electronic component as recited in claim 25, wherein said electronic component further comprises at least one of a network switch and a media access controller.